



Machine Translation of WO 96/22413

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Selflying floor mat and its production process the invention relates to a lying, floor mat and a method to its making, consisting of a textile external layer and at least a lower layer.

Lying floor mat it are characterised by the fact that it on an even underlay, e.g. Concrete floors, to be laid out can, without having to be glued on. Of them relatively heavy, flexible lower layer clings on the underlay and slips not.

There is well-known lying floor mat, with which the textile external layer on a bitumen layer clings. It is unfavorable with these floor mats that the compact bitumen layer does not permit a water passage. The possibilities their use limits on free area-unfavorably is further that they can be taken up after the wear of the textile material with difficulty to the recycling procedure, because the bitumen penetrates into the textile material, so that one can separate the layers only on a particular apparatus and only partly.

From DE Patentanmeldung 39 02 419 a panel is well-known for soil and wall covering, which consist of a granular material of scrap tire material and a Zweikomponenten Hazrbindemittel. The Füllmittel is spread with the adhesive mixed, which both components in stoichiometric hold-sneeze contained, the mixture on the tray of a flat form, which is inserted into a press, in which the mass under pressure and at the ambient temperature be hardened can. In this way produced plate has only limited use, u.z. on free areas, in riding schools udg. Out to these plates formed surface corresponds not to the aesthetic demands, which are made against interiors, in addition and flows the smell of the used rubber. With the stoichiometric reaction of the resin bonding agent poisonous reaction products separate.

From the WHERE patent application 93/19654 is the following production procedure of carpet plates well-known: A mixture of the amorphous Olefin polymer is warmed up, spread melted and on an endless tape. To the lower side of the textile material a thin coating is < by the liquid amorphous; RTI ID=2.1> Olefin Polymer< /RTI> laid on, and the textile material is bonded with this side on the lower coating. The product is then cooled down, solved and cut open from the endless tape. An analog method is described in the EP patent application 0,570,236, with the difference that the lower layer contains Magnesium-Hydroxid and glass chamfers or polyester chamfers as filler, and the coating, whose task is it to create connection between the textile material and the lower layer in form of a film is supplied. The first part of the endless tie is here from downside warmed up, the second part against it is cooled down. The two technologies have however no lying floor mat to the result, the worn textile material are with difficulty from the lower layer to be separated, in both felling the production by an additional connecting intermediate layer are complicated, whereby the connection is unsolvable, which makes the separate recycling more difficult of both coatings.

The invention places itself to the task to to create a lying floor mat which uses generally speaking extent of secondary raw materials, whose further recycling fulfills made possible and aesthetic requirements, on preservation of necessary mechanical properties, water permeability taken into consideration.

This task is solved according to invention by a lying floor mat, which consists of a textile external layer and at least a lower layer arranged from granulates and/or a Faserfüllstoff and a polymer binding off, whereby that binding off, which < with 10 to 30; RTI ID=3.1> < /RTI> in the mass of the lower layer is involved, a film at the granular material and/or the fibers of the filler forms, between which pores are formed for individual grains and/or fibers of the filler coated with binding off and dived in into the binding off fibers responsible at the surface of the lower layer, which stand out from the lower surface of the textile material.

The filler of the lower layer is preferably granular material of scrap tire material, granulation from 0,5 to 5 mm, the lower layer contains PU as adhesive, and the textile external layer is from a Textilverbundstoff from polypropylene fibers.

A favourable arrangement of the floor mat can consist of a textile external layer and of at least two lower layers, whose composition is different.

The method according to invention consists of the fact that the grains and/or fibers of the filler with a film are coated by the polymerizing adhesive in the liquid condition, whereby the adhesive 10 to 30 mass parts of the Mixture it forms that the mixture on an even underlay is spread to a lower layer and with the lower surface of the textile material into contact comes, which can be polymerized to adhesives in the lower layer, whereby both coatings with a pressure become from 20 to 200 kPa one on the other-compressed. Afterwards the polymerisation can be completed, and the lining is < if necessary into ge; RTI ID=4.1> wünschte< /RTI> Forms cut open.

The textile external layer can be put thereby on the surface of the lower layer, or the textile material is put upward first on the underlay with the lower surface, and on this the mixture is then spread by granular material and/or fibers and binding off.

The polymerisation in the lower layer and the Aufeinanderpressen of both sheathings can run either in the static condition or with motion of both layers stacked one on the other, which the principle of a discontinuous and/or continuous method according to invention is.

The granular material and the PU adhesive are preferably < before mixing, in the course of mixing and/or in the coating on a temperature from 100 to; RTI ID=4.2> 150 0C</RTI> warmed up.

Before the mixture is spread from filler and binding off to a lower layer, the grains become and/or. Fibers of the filler with a thin film of the polymerizing binding off in the liquid condition coats. With the relatively low pressure, which affects the coatings, the grains and/or fibers are connected by the polymerisation only in places of the common contact, whereby between them pores remain. The fact that the grains and/or fibers with the binding off are only coated, entails a further advantage, u.z. that at the contact surface of both coatings at the moment the contact only a small quantity of liquid binding off is present. Thus the polymer does not penetrate into the textile material inside, but only the textile fibers outstanding from the surface of the textile material immerse into the liquid binding off and by the polymerisation in it are held. In this way a connection is obtained, which excludes mutual Schubbewegung of both coatings, which makes however a clean separation of the textile material of the lower layer and a following recycling possible of both coatings.

Further items of the invention are to be taken from the following embodiments on the basis a design, in the Fig. 1 a discontinuous and a Fig. 2 a continuous preparation of floor mat schematically represent.

Lying floor mat were developed, whose textile external layer 1 by Textilverbundstoff from polypropylene fibers and the lower layer is formed by PU binding off by granular material by scrap tire material and. The granulation of the granular material is 0.5 to 5.0 mm. The mass of the lining per square meter amounts to approx. 4 kg, the lining proves a good resistance to wear, and its stability during the wear by a wheelchair is at least twice as high in the comparison with the same textile material without lower layer.

As filler in the lower layer different textile fibers, Holzsplitter can be u.d.g. benutzt, unmarried or in combination, if necessary also with an additive of inorganic granulate, as for instance sand, clinkering and u.d.g., or of inorganic fibers, like e.g. except granular material of scrap tire material. Glass, asbestos fibers u.d.g.

When binding off come the polymers into Ewägung, which make casing possible of filler particles with a thin film, and after the lower layer was formed, they form a tough-sticky film on the contact surface, in which the fibers outstanding from the textile material which can be presented are held. Except the mentioned PU still further polymers are e.g. applicable. Polyvinylethylen, butyl rubber, fluorelastometric one among other things

With the example-in accordance with-eaten diskontinuellen production procedure of floor mat the granular material and the liquid PU adhesive are transmitted to 4 of the adhesive of a mixing apparatus 5 from a container 3 of the granular material and from a container. From this the mixture is omitted into a flat form 6, here with squeegees to a regular layer 2 spread, on their surface a textile material cut put, and the form 6 with both coatings 1, inserted 2 into a hot press 7, whose table 8 on a temperature of 1400C and their bear 9 are warmed up on a temperature of 900C. After 5 minutes the polymerisation of the adhesive is completed with moderate pressure, and the form is shifted out from the press, the floor mat is taken out, one leaves it to cooling, and it is cut open into desired forms.

With a continuous production procedure the individual components are warmed 4 up in containers 3, the heating up is already continued in the mixing apparatus 5, and from this the mixture is pressed out by a Schlitz 10 to a regular coating on the surface of an endless tape 11. On the lower layer 2 from above a textile material layer 1 is bonded. Both coatings 1, 2 are carried between calender rolls 12, whereby the temperature of the lower rollers amounts to 1400C and the upper 900C. After max. 5-minütigem passage by the warm part 13 of the production road is essentially carried out the polymerisation in the lower layer 2. A cooling section 14 follows, and afterwards the floor mat is cut open into desired forms.

Particularly with the continuous method one can take place also in such a way that on on infinite tape 11 put textile layer 1 a coating 2 from the mixture is pressed out by granular material and adhesive by a slot 10. In this case the upper calender rolls are warmed up on a higher temperature than the lower.

The floor mat according to invention manufactured by the described production procedure finds a broad use in interiors as well as on free area, preferably in the form of lying squares, which can be shifted on limited time and be put down then simply on another surface. According to the process of the life the coatings can be separated simply to the purpose

▲ top from recycling.